

# SEQUENCE LISTING

<110> Human Genome Sciences, Inc.

<120> Albumin Fusion Proteins

<130> PF565

<140> To be assigned

<141> 2004-04-02

<150> PCT/US02/31794

<151> 2002-10-04

<150> 60/327,281

<151> 2001-10-05

<160> 72

<170> PatentIn Ver. 2.1

<210> 1

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<221> primer\_bind

<223> primer useful to clone human growth hormone cDNA

<400> 1

cccaagaatt cccttatcca ggc

23

<210> 2

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<221> primer\_bind

<223> primer useful to clone human growth hormone cDNA

<400> 2

gggaagctta gaagccacag gatccctcca cag

33

<210> 3

<211> 16

<212> DNA

<213> Artificial Sequence

<220>

<221> misc\_structure

<223> synthetic oligonucleotide used to join DNA fragments with non-cohesive ends.

<400> 3  
gataaagatt cccaac 16

<210> 4  
<211> 17  
<212> DNA  
<213> Artificial Sequence  
  
<220>  
<221> misc\_structure  
<223> synthetic oligonucleotide used to join DNA fragments  
with non-cohesive ends.

<400> 4  
aattgttggg aatcttt 17

<210> 5  
<211> 17  
<212> DNA  
<213> Artificial Sequence  
  
<220>  
<221> misc\_structure  
<223> synthetic oligonucleotide used to join DNA fragments  
with non-cohesive ends.

<400> 5  
ttaggcttat tccaac 17

<210> 6  
<211> 18  
<212> DNA  
<213> Artificial Sequence  
  
<220>  
<221> misc\_structure  
<223> synthetic oligonucleotide used to join DNA fragments  
with non-cohesive ends.

<400> 6  
aattgttggg aataagcc 18

<210> 7  
<211> 24  
<212> PRT  
<213> Artificial Sequence  
  
<220>  
<221> SITE  
<222> 1)..(19)  
<223> invertase leader sequence  
  
<220>

<221> SITE  
 <222> 20)..(24)  
 <223> first 5 amino acids of mature human serum albumin

<400> 7  
 Met Leu Leu Gln Ala Phe Leu Phe Leu Leu Ala Gly Phe Ala Ala Lys  
     1                    5                    10                    15  
 Ile Ser Ala Asp Ala His Lys Ser  
                     20

<210> 8  
 <211> 21  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <221> misc\_structure  
 <223> synthetic oligonucleotide used to join DNA  
 fragments with non-cohesive ends.

<400> 8  
 gagatgcaca cctgagtgag g 21

<210> 9  
 <211> 27  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <221> misc\_structure  
 <223> synthetic oligonucleotide used to join DNA  
 fragments with non-cohesive ends.

<400> 9  
 gatcctgtgg cttcgatgca cacaaga 27

<210> 10  
 <211> 24  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <221> misc\_structure  
 <223> synthetic oligonucleotide used to join DNA  
 fragments with non-cohesive ends.

<400> 10  
 ctcttgtgtg catcgaagcc acag 24

<210> 11  
 <211> 30  
 <212> DNA

<213> Artificial Sequence

<220>

<221> misc\_structure

<223> synthetic oligonucleotide used to join DNA fragments with non-cohesive ends.

<400> 11

tgtggaagag cctcagaatt tattcccaac

30

<210> 12

<211> 31

<212> DNA

<213> Artificial Sequence

<220>

<221> misc\_structure

<223> synthetic oligonucleotide used to join DNA fragments with non-cohesive ends.

<400> 12

aattgttggg aataaattct gaggctcttc c

31

<210> 13

<211> 47

<212> DNA

<213> Artificial Sequence

<220>

<221> misc\_structure

<223> synthetic oligonucleotide used to join DNA fragments with non-cohesive ends.

<400> 13

ttaggcttag gtggcggtgg atccggcggt ggtggatctt tcccaac

47

<210> 14

<211> 48

<212> DNA

<213> Artificial Sequence

<220>

<221> misc\_structure

<223> synthetic oligonucleotide used to join DNA fragments with non-cohesive ends.

<400> 14

aattgttggg aaagatccac caccgccgga tccaccgcca cctaagcc

48

<210> 15

<211> 62

<212> DNA

<213> Artificial Sequence

```

<220>
<221> misc_structure
<223> synthetic oligonucleotide used to join DNA
fragments with non-cohesive ends.

<400> 15
ttaggcttag gcggtggtgg atctggtggc ggcggatctg gtggcggtgg atccttccca 60
ac                                                                                   62

<210> 16
<211> 63
<212> DNA
<213> Artificial Sequence

<220>
<221> misc_structure
<223> synthetic oligonucleotide used to join DNA
fragments with non-cohesive ends.

<400> 16
aattgttggg aaggatccac cgccaccaga tccgccgccca ccagatccac caccgcctaa 60
gcc                                                                                   63

<210> 17
<211> 1782
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (1)..(1755)

<400> 17
gat gca cac aag agt gag gtt gct cat cgg ttt aaa gat ttg gga gaa 48
Asp Ala His Lys Ser Glu Val Ala His Arg Phe Lys Asp Leu Gly Glu
1 5 10 15

gaa aat ttc aaa gcc ttg gtg ttg att gcc ttt gct cag tat ctt cag 96
Glu Asn Phe Lys Ala Leu Val Leu Ile Ala Phe Ala Gln Tyr Leu Gln
20 25 30

cag tgt cca ttt gaa gat cat gta aaa tta gtg aat gaa gta act gaa 144
Gln Cys Pro Phe Glu Asp His Val Lys Leu Val Asn Glu Val Thr Glu
35 40 45

ttt gca aaa aca tgt gtt gct gat gag tca gct gaa aat tgt gac aaa 192
Phe Ala Lys Thr Cys Val Ala Asp Glu Ser Ala Glu Asn Cys Asp Lys
50 55 60

tca ctt cat acc ctt ttt gga gac aaa tta tgc aca gtt gca act ctt 240
Ser Leu His Thr Leu Phe Gly Asp Lys Leu Cys Thr Val Ala Thr Leu
65 70 75 80

```

cgt gaa acc tat ggt gaa atg gct gac tgc tgt gca aaa caa gaa cct	288
Arg Glu Thr Tyr Gly Glu Met Ala Asp Cys Cys Ala Lys Gln Glu Pro	
85 90 95	
gag aga aat gaa tgc ttc ttg caa cac aaa gat gac aac cca aac ctc	336
Glu Arg Asn Glu Cys Phe Leu Gln His Lys Asp Asp Asn Pro Asn Leu	
100 105 110	
ccc cga ttg gtg aga cca gag gtt gat gtg atg tgc act gct ttt cat	384
Pro Arg Leu Val Arg Pro Glu Val Asp Val Met Cys Thr Ala Phe His	
115 120 125	
gac aat gaa gag aca ttt ttg aaa aaa tac tta tat gaa att gcc aga	432
Asp Asn Glu Glu Thr Phe Leu Lys Lys Tyr Leu Tyr Glu Ile Ala Arg	
130 135 140	
aga cat cct tac ttt tat gcc ccg gaa ctc ctt ttc ttt gct aaa agg	480
Arg His Pro Tyr Phe Tyr Ala Pro Glu Leu Leu Phe Phe Ala Lys Arg	
145 150 155 160	
tat aaa gct gct ttt aca gaa tgt tgc caa gct gct gat aaa gct gcc	528
Tyr Lys Ala Ala Phe Thr Glu Cys Cys Gln Ala Ala Asp Lys Ala Ala	
165 170 175	
tgc ctg ttg cca aag ctc gat gaa ctt cgg gat gaa ggg aag gct tcg	576
Cys Leu Leu Pro Lys Leu Asp Glu Leu Arg Asp Glu Gly Lys Ala Ser	
180 185 190	
tct gcc aaa cag aga ctc aaa tgt gcc agt ctc caa aaa ttt gga gaa	624
Ser Ala Lys Gln Arg Leu Lys Cys Ala Ser Leu Gln Lys Phe Gly Glu	
195 200 205	
aga gct ttc aaa gca tgg gca gtg gct cgc ctg agc cag aga ttt ccc	672
Arg Ala Phe Lys Ala Trp Ala Val Ala Arg Leu Ser Gln Arg Phe Pro	
210 215 220	
aaa gct gag ttt gca gaa gtt tcc aag tta gtg aca gat ctt acc aaa	720
Lys Ala Glu Phe Ala Glu Val Ser Lys Leu Val Thr Asp Leu Thr Lys	
225 230 235 240	
gtc cac acg gaa tgc tgc cat gga gat ctg ctt gaa tgt gct gat gac	768
Val His Thr Glu Cys Cys His Gly Asp Leu Leu Glu Cys Ala Asp Asp	
245 250 255	
agg gcg gac ctt gcc aag tat atc tgt gaa aat cag gat tcg atc tcc	816
Arg Ala Asp Leu Ala Lys Tyr Ile Cys Glu Asn Gln Asp Ser Ile Ser	
260 265 270	
agt aaa ctg aag gaa tgc tgt gaa aaa cct ctg ttg gaa aaa tcc cac	864
Ser Lys Leu Lys Glu Cys Cys Glu Lys Pro Leu Leu Glu Lys Ser His	
275 280 285	
tgc att gcc gaa gtg gaa aat gat gag atg cct gct gac ttg cct tca	912
Cys Ile Ala Glu Val Glu Asn Asp Glu Met Pro Ala Asp Leu Pro Ser	
290 295 300	
tta gct gct gat ttt gtt gaa agt aag gat gtt tgc aaa aac tat gct	960

Leu	Ala	Ala	Asp	Phe	Val	Glu	Ser	Lys	Asp	Val	Cys	Lys	Asn	Tyr	Ala		
305					310					315					320		
gag	gca	aag	gat	gtc	ttc	ctg	ggc	atg	ttt	ttg	tat	gaa	tat	gca	aga	1008	
Glu	Ala	Lys	Asp	Val	Phe	Leu	Gly	Met	Phe	Leu	Tyr	Glu	Tyr	Ala	Arg		
				325					330					335			
agg	cat	cct	gat	tac	tct	gtc	gtg	ctg	ctg	ctg	aga	ctt	gcc	aag	aca	1056	
Arg	His	Pro	Asp	Tyr	Ser	Val	Val	Leu	Leu	Leu	Arg	Leu	Ala	Lys	Thr		
			340					345					350				
tat	gaa	acc	act	cta	gag	aag	tgc	tgt	gcc	gct	gca	gat	cct	cat	gaa	1104	
Tyr	Glu	Thr	Thr	Leu	Glu	Lys	Cys	Cys	Ala	Ala	Ala	Asp	Pro	His	Glu		
		355					360					365					
tgc	tat	gcc	aaa	gtg	ttc	gat	gaa	ttt	aaa	cct	ctt	gtg	gaa	gag	cct	1152	
Cys	Tyr	Ala	Lys	Val	Phe	Asp	Glu	Phe	Lys	Pro	Leu	Val	Glu	Glu	Pro		
	370					375					380						
cag	aat	tta	atc	aaa	caa	aac	tgt	gag	ctt	ttt	gag	cag	ctt	gga	gag	1200	
Gln	Asn	Leu	Ile	Lys	Gln	Asn	Cys	Glu	Leu	Phe	Glu	Gln	Leu	Gly	Glu		
385					390					395				400			
tac	aaa	ttc	cag	aat	gcg	cta	tta	gtt	cgt	tac	acc	aag	aaa	gta	ccc	1248	
Tyr	Lys	Phe	Gln	Asn	Ala	Leu	Leu	Val	Arg	Tyr	Thr	Lys	Lys	Val	Pro		
			405						410					415			
caa	gtg	tca	act	cca	act	ctt	gta	gag	gtc	tca	aga	aac	cta	gga	aaa	1296	
Gln	Val	Ser	Thr	Pro	Thr	Leu	Val	Glu	Val	Ser	Arg	Asn	Leu	Gly	Lys		
			420					425					430				
gtg	ggc	agc	aaa	tgt	tgt	aaa	cat	cct	gaa	gca	aaa	aga	atg	ccc	tgt	1344	
Val	Gly	Ser	Lys	Cys	Cys	Lys	His	Pro	Glu	Ala	Lys	Arg	Met	Pro	Cys		
		435				440						445					
gca	gaa	gac	tat	cta	tcc	gtg	gtc	ctg	aac	cag	tta	tgt	gtg	ttg	cat	1392	
Ala	Glu	Asp	Tyr	Leu	Ser	Val	Val	Leu	Asn	Gln	Leu	Cys	Val	Leu	His		
	450					455					460						
gag	aaa	acg	cca	gta	agt	gac	aga	gtc	aca	aaa	tgc	tgc	aca	gag	tcc	1440	
Glu	Lys	Thr	Pro	Val	Ser	Asp	Arg	Val	Thr	Lys	Cys	Cys	Thr	Glu	Ser		
465				470					475					480			
ttg	gtg	aac	agg	cga	cca	tgc	ttt	tca	gct	ctg	gaa	gtc	gat	gaa	aca	1488	
Leu	Val	Asn	Arg	Arg	Pro	Cys	Phe	Ser	Ala	Leu	Glu	Val	Asp	Glu	Thr		
			485						490					495			
tac	gtt	ccc	aaa	gag	ttt	aat	gct	gaa	aca	ttc	acc	ttc	cat	gca	gat	1536	
Tyr	Val	Pro	Lys	Glu	Phe	Asn	Ala	Glu	Thr	Phe	Thr	Phe	His	Ala	Asp		
		500						505					510				
ata	tgc	aca	ctt	tct	gag	aag	gag	aga	caa	atc	aag	aaa	caa	act	gca	1584	
Ile	Cys	Thr	Leu	Ser	Glu	Lys	Glu	Arg	Gln	Ile	Lys	Lys	Gln	Thr	Ala		
		515					520					525					
ctt	gtt	gag	ctt	gtg	aaa	cac	aag	ccc	aag	gca	aca	aaa	gag	caa	ctg	1632	
Leu	Val	Glu	Leu	Val	Lys	His	Lys	Pro	Lys	Ala	Thr	Lys	Glu	Gln	Leu		

```

530          535          540
aaa gct gtt atg gat gat ttc gca gct ttt gta gag aag tgc tgc aag 1680
Lys Ala Val Met Asp Asp Phe Ala Ala Phe Val Glu Lys Cys Cys Lys
545          550          555          560

gct gac gat aag gag acc tgc ttt gcc gag gag ggt aaa aaa ctt gtt 1728
Ala Asp Asp Lys Glu Thr Cys Phe Ala Glu Glu Gly Lys Lys Leu Val
565          570          575

gct gca agt caa gct gcc tta ggc tta taacatctac atttaaaagc atctcag 1782
Ala Ala Ser Gln Ala Ala Leu Gly Leu
580          585

<210> 18
<211> 585
<212> PRT
<213> Homo Sapiens

<400> 18
Asp Ala His Lys Ser Glu Val Ala His Arg Phe Lys Asp Leu Gly Glu
1          5          10          15

Glu Asn Phe Lys Ala Leu Val Leu Ile Ala Phe Ala Gln Tyr Leu Gln
20          25          30

Gln Cys Pro Phe Glu Asp His Val Lys Leu Val Asn Glu Val Thr Glu
35          40          45

Phe Ala Lys Thr Cys Val Ala Asp Glu Ser Ala Glu Asn Cys Asp Lys
50          55          60

Ser Leu His Thr Leu Phe Gly Asp Lys Leu Cys Thr Val Ala Thr Leu
65          70          75          80

Arg Glu Thr Tyr Gly Glu Met Ala Asp Cys Cys Ala Lys Gln Glu Pro
85          90          95

Glu Arg Asn Glu Cys Phe Leu Gln His Lys Asp Asp Asn Pro Asn Leu
100         105         110

Pro Arg Leu Val Arg Pro Glu Val Asp Val Met Cys Thr Ala Phe His
115         120         125

Asp Asn Glu Glu Thr Phe Leu Lys Lys Tyr Leu Tyr Glu Ile Ala Arg
130         135         140

Arg His Pro Tyr Phe Tyr Ala Pro Glu Leu Leu Phe Phe Ala Lys Arg
145         150         155         160

Tyr Lys Ala Ala Phe Thr Glu Cys Cys Gln Ala Ala Asp Lys Ala Ala
165         170         175

Cys Leu Leu Pro Lys Leu Asp Glu Leu Arg Asp Glu Gly Lys Ala Ser
180         185         190

```



Ser Ala Lys Gln Arg Leu Lys Cys Ala Ser Leu Gln Lys Phe Gly Glu  
 195 200 205  
 Arg Ala Phe Lys Ala Trp Ala Val Ala Arg Leu Ser Gln Arg Phe Pro  
 210 215 220  
 Lys Ala Glu Phe Ala Glu Val Ser Lys Leu Val Thr Asp Leu Thr Lys  
 225 230 235 240  
 Val His Thr Glu Cys Cys His Gly Asp Leu Leu Glu Cys Ala Asp Asp  
 245 250 255  
 Arg Ala Asp Leu Ala Lys Tyr Ile Cys Glu Asn Gln Asp Ser Ile Ser  
 260 265 270  
 Ser Lys Leu Lys Glu Cys Cys Glu Lys Pro Leu Leu Glu Lys Ser His  
 275 280 285  
 Cys Ile Ala Glu Val Glu Asn Asp Glu Met Pro Ala Asp Leu Pro Ser  
 290 295 300  
 Leu Ala Ala Asp Phe Val Glu Ser Lys Asp Val Cys Lys Asn Tyr Ala  
 305 310 315 320  
 Glu Ala Lys Asp Val Phe Leu Gly Met Phe Leu Tyr Glu Tyr Ala Arg  
 325 330 335  
 Arg His Pro Asp Tyr Ser Val Val Leu Leu Leu Arg Leu Ala Lys Thr  
 340 345 350  
 Tyr Glu Thr Thr Leu Glu Lys Cys Cys Ala Ala Ala Asp Pro His Glu  
 355 360 365  
 Cys Tyr Ala Lys Val Phe Asp Glu Phe Lys Pro Leu Val Glu Glu Pro  
 370 375 380  
 Gln Asn Leu Ile Lys Gln Asn Cys Glu Leu Phe Glu Gln Leu Gly Glu  
 385 390 395 400  
 Tyr Lys Phe Gln Asn Ala Leu Leu Val Arg Tyr Thr Lys Lys Val Pro  
 405 410 415  
 Gln Val Ser Thr Pro Thr Leu Val Glu Val Ser Arg Asn Leu Gly Lys  
 420 425 430  
 Val Gly Ser Lys Cys Cys Lys His Pro Glu Ala Lys Arg Met Pro Cys  
 435 440 445  
 Ala Glu Asp Tyr Leu Ser Val Val Leu Asn Gln Leu Cys Val Leu His  
 450 455 460  
 Glu Lys Thr Pro Val Ser Asp Arg Val Thr Lys Cys Cys Thr Glu Ser  
 465 470 475 480  
 Leu Val Asn Arg Arg Pro Cys Phe Ser Ala Leu Glu Val Asp Glu Thr  
 485 490 495

Tyr Val Pro Lys Glu Phe Asn Ala Glu Thr Phe Thr Phe His Ala Asp  
                   500                                  505                                  510  
 Ile Cys Thr Leu Ser Glu Lys Glu Arg Gln Ile Lys Lys Gln Thr Ala  
                   515                                  520                                  525  
 Leu Val Glu Leu Val Lys His Lys Pro Lys Ala Thr Lys Glu Gln Leu  
                   530                                  535                                  540  
 Lys Ala Val Met Asp Asp Phe Ala Ala Phe Val Glu Lys Cys Cys Lys  
                   545                                  550                                  555                                  560  
 Ala Asp Asp Lys Glu Thr Cys Phe Ala Glu Glu Gly Lys Lys Leu Val  
                                   565                                  570                                  575  
 Ala Ala Ser Gln Ala Ala Leu Gly Leu  
                                   580                                  585

<210> 19  
 <211> 57  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <221> primer\_bind  
 <223> primer used to generate XhoI and ClaI  
 site in pPPC0006

<400> 19  
 gcctcgagaa aagagatgca cacaagagtg aggttgctca tcgatttaaa gatttgg 57

<210> 20  
 <211> 58  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <221> primer\_bind  
 <223> primer used in generation XhoI and ClaI  
 site in pPPC0006

<400> 20  
 aatcgatgag caacctcact cttgtgtgca tctcttttct cgaggctcct ggaataag 58

<210> 21  
 <211> 24  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <221> primer\_bind  
 <223> primer used in generation XhoI and ClaI  
 site in pPPC0006

<400> 21  
 tacaaactta agagtccaat tagc 24

<210> 22  
 <211> 29  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <221> primer\_bind  
 <223> primer used in generation XhoI and ClaI  
 site in pPPC0006

<400> 22  
 cacttctcta gagtggtttc atatgtctt 29

<210> 23  
 <211> 60  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <221> Misc\_Structure  
 <223> Synthetic oligonucleotide used to alter restriction  
 sites in pPPC0007

<400> 23  
 aagctgcctt aggcttataa taaggcgcgc cgcccgccg tttaaactaa gcttaattct 60

<210> 24  
 <211> 60  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <221> Misc\_Structure  
 <223> Synthetic oligonucleotide used to alter restriction  
 sites in pPPC0007

<400> 24  
 agaattaagc ttagtttaaa cgcccgccg gcgcgcctta ttataagcct aaggcagctt 60

<210> 25  
 <211> 32  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <221> primer\_bind  
 <223> forward primer useful for generation of albumin  
 fusion protein in which the albumin moiety is N-terminal  
 of the Therapeutic Protein

<220>  
<221> misc feature  
<222> (18)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (19)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (20)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (21)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (22)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (23)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (24)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (25)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (26)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (27)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (28)  
<223> n equals a,t,g, or c

<220>

<221> misc feature  
<222> (29)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (30)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (31)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (32)  
<223> n equals a,t,g, or c

<400> 25  
aagctgcctt aggccttannn nnnnnnnnnn nn

32

<210> 26  
<211> 51  
<212> DNA  
<213> Artificial Sequence

<220>  
<221> primer\_bind  
<223> reverse primer useful for generation of albumin  
fusion protein in which the albumin moiety is N-terminal  
of the Therapeutic Protein

<220>  
<221> misc feature  
<222> (37)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (38)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (39)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (40)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (41)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (42)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (43)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (44)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (45)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (46)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (47)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (48)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (49)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (50)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (51)  
<223> n equals a,t,g, or c

<400> 26  
gcgcgcgttt aaacggccgg ccggcgcgcc ttattannnn nnnnnnnnnn n

51

<210> 27  
<211> 33

<212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> forward primer useful for generation of albumin fusion  
 protein in which the albumin moiety is c-terminal of the  
 Therapeutic Protein  
  
 <220>  
 <221> misc feature  
 <222> (19)  
 <223> n equals a,t,g, or c  
  
 <220>  
 <221> misc feature  
 <222> (20)  
 <223> n equals a,t,g, or c  
  
 <220>  
 <221> misc feature  
 <222> (21)  
 <223> n equals a,t,g, or c  
  
 <220>  
 <221> misc feature  
 <222> (22)  
 <223> n equals a,t,g, or c  
  
 <220>  
 <221> misc feature  
 <222> (23)  
 <223> n equals a,t,g, or c  
  
 <220>  
 <221> misc feature  
 <222> (24)  
 <223> n equals a,t,g, or c  
  
 <220>  
 <221> misc feature  
 <222> (25)  
 <223> n equals a,t,g, or c  
  
 <220>  
 <221> misc feature  
 <222> (26)  
 <223> n equals a,t,g, or c  
  
 <220>  
 <221> misc feature  
 <222> (27)  
 <223> n equals a,t,g, or c  
  
 <220>  
 <221> misc feature  
 <222> (28)  
 <223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (29)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (30)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (31)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (32)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (33)  
<223> n equals a,t,g, or c

<400> 27  
aggagcgtcg acaaaagann nnnnnnnnnn nnn

33

<210> 28  
<211> 52  
<212> DNA  
<213> Artificial Sequence

<220>  
<221> primer\_bind  
<223> reverse primer useful for generation of albumin  
fusion protein in which the albumin moiety is c-terminal of  
the Therapeutic Protein

<220>  
<221> misc feature  
<222> (38)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (39)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (40)  
<223> n equals a,t,g, or c

<220>



<221> misc feature  
<222> (41)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (42)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (43)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (44)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (45)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (46)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (47)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (48)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (49)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (50)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (51)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (52)

<223> n equals a,t,g, or c

<400> 28  
ctttaaatcg atgagcaacc tcactcttgt gtgcacnnnn nnnnnnnnnn nn 52

<210> 29  
<211> 24  
<212> PRT  
<213> Artificial Sequence

<220>  
<221> signal  
<223> signal peptide of natural human serum albumin protein

<400> 29  
Met Lys Trp Val Ser Phe Ile Ser Leu Leu Phe Leu Phe Ser Ser Ala  
1 5 10 15  
Tyr Ser Arg Ser Leu Asp Lys Arg  
20

<210> 30  
<211> 114  
<212> DNA  
<213> Artificial Sequence

<220>  
<221> primer\_bind  
<223> forward primer useful for generation of PC4:HSA  
albumin fusion VECTOR

<220>  
<221> misc\_feature  
<222> (5)..(10)  
<223> BamHI restriction site

<220>  
<221> misc\_feature  
<222> (11)..(16)  
<223> Hind III restriction site

<220>  
<221> misc\_feature  
<222> (17)..(27)  
<223> Kozak sequence

<220>  
<221> misc\_feature  
<222> (25)..(97)  
<223> cds natural signal sequence of human serum albumin

<220>  
<221> misc\_feature  
<222> (75)..(81)  
<223> XhoI restriction site

```

<220>
<221> misc_feature
<222> (98)..(114)
<223> cds first six amino acids of human serum albumin

<400> 30
tcagggatcc aagcttccgc caccatgaag tgggtaacct ttatttcctt tctttttctc 60

tttagctcgg cttactcgag ggggtgtgttt cgtcgagatg cacacaagag tgag      114

<210> 31
<211> 43
<212> DNA
<213> Artificial Sequence

<220>
<221> primer_bind
<223> reverse primer useful for generation of
PC4:HSA albumin fusion VECTOR

<220>
<221> misc_feature
<222> (6)..(11)
<223> Asp718 restriction site

<220>
<221> misc_feature
<222> (12)..(17)
<223> EcoRI restriction site

<220>
<221> misc_feature
<222> (15)..(17)
<223> reverse complement of stop codon

<220>
<221> misc_feature
<222> (18)..(25)
<223> AscI restriction site

<220>
<221> misc_feature
<222> (18)..(43)
<223> reverse complement of DNA sequence encoding last 9 amino acids

<400> 31
gcagcggtag cgaattcggc ggcgcttata agcctaaggc agc      43

<210> 32
<211> 46
<212> DNA
<213> Artificial Sequence

<220>
<221> primer_bind
<223> forward primer useful for inserting Therapeutic

```

protein into pC4:HSA vector

<220>  
<221> misc feature  
<222> (29)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (30)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (31)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (32)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (33)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (34)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (35)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (36)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (37)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (38)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (39)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (40)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (41)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (42)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (43)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (44)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (45)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (46)  
<223> n equals a,t,g, or c

<400> 32  
ccgccgctcg aggggtgtgt ttcgtcgann nnnnnnnnnn nnnnnn

46

<210> 33  
<211> 55  
<212> DNA  
<213> Artificial Sequence

<220>  
<221> primer\_bind  
<223> reverse primer useful for inserting Therapeutic  
protein into pC4:HSA vector

<220>  
<221> misc feature  
<222> (38)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (39)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (40)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (41)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (42)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (43)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (44)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (45)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (46)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (47)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (48)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (49)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (50)  
<223> n equals a,t,g, or c

<220>

<221> misc feature  
<222> (51)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (52)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (53)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (54)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (55)  
<223> n equals a,t,g, or c

<400> 33  
agtcccatcg atgagcaacc tcactcttgt gtgcacnnnn nnnnnnnnnn nnnnn 55

<210> 34  
<211> 17  
<212> PRT  
<213> Artificial Sequence

<220>  
<221> signal  
<223> Stanniocalcin signal peptide

<400> 34  
Met Leu Gln Asn Ser Ala Val Leu Leu Leu Leu Val Ile Ser Ala Ser  
1 5 10 15

Ala

<210> 35  
<211> 22  
<212> PRT  
<213> Artificial Sequence

<220>  
<221> signal  
<223> Synthetic signal peptide

<400> 35  
Met Pro Thr Trp Ala Trp Trp Leu Phe Leu Val Leu Leu Leu Ala Leu  
1 5 10 15

Trp Ala Pro Ala Arg Gly  
20

<210> 36  
 <211> 23  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <221>primer\_bind  
 <223>Degenerate VH forward primer useful for  
 amplifying human VH domains  
  
 <400> 36  
 caggtgcagc tgggtgcagtc tgg 23  
  
 <210> 37  
 <211> 23  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <221>primer\_bind  
 <223>Degenerate VH forward primer useful for  
 amplifying human VH domains  
  
 <400> 37  
 caggtcaact taagggagtc tgg 23  
  
 <210> 38  
 <211> 23  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <221>primer\_bind  
 <223>Degenerate VH forward primer useful for  
 amplifying human VH domains  
  
 <400> 38  
 gaggtgcagc tgggtggagtc tgg 23  
  
 <210> 39  
 <211> 23  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <221>primer\_bind  
 <223>Degenerate VH forward primer useful for  
 amplifying human VH domains  
  
 <400> 39  
 caggtgcagc tgcaggagtc ggg 23  
  
 <210> 40  
 <211> 23



<212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <221>primer\_bind  
 <223>Degenerate VH forward primer useful for  
 amplifying human VH domains  
  
 <400> 40  
 gaggtgcagc tgttcgagtc tgc 23  
  
  
 <210> 41  
 <211> 23  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <221>primer\_bind  
 <223>Degenerate VH forward primer useful for  
 amplifying human VH domains  
  
 <400> 41  
 caggtacagc tgcagcagtc agg 23  
  
 <210> 42  
 <211> 24  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <221>primer\_bind  
 <223>Degenerate JH reverse primer useful for  
 amplifying human VH domains  
  
 <400> 42  
 tgaggagacg gtgaccaggg tgcc 24  
  
 <210> 43  
 <211> 24  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <221>primer\_bind  
 <223>Degenerate JH reverse primer useful for  
 amplifying human VH domains  
  
 <400> 43  
 tgaagagacg gtgaccattg tccc 24  
  
 <210> 44  
 <211> 24  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>

<221>primer\_bind  
 <223>Degenerate JH reverse primer useful for  
 amplifying human VH domains

<400> 44  
 tgaggagacg gtgaccaggg ttcc 24

<210> 45  
 <211> 24  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <221>primer\_bind  
 <223>Degenerate JH reverse primer useful for  
 amplifying human VH domains

<400> 45  
 tgaggagacg gtgaccgtgg tccc 24

<210> 46  
 <211> 23  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <221>primer\_bind  
 <223>Degenerate Vkappa forward primer useful for  
 amplifying human VL domains

<400> 46  
 gacatccaga tgaccagtc tcc 23

<210> 47  
 <211> 23  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <221>primer\_bind  
 <223>Degenerate Vkappa forward primer useful for  
 amplifying human VL domains

<400> 47  
 gatgttgtga tgactcagtc tcc 23

<210> 48  
 <211> 23  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <221>primer\_bind  
 <223>Degenerate Vkappa forward primer useful for  
 amplifying human VL domains

<400> 48

gatattgtga tgactcagtc tcc	23
<210> 49	
<211> 23	
<212> DNA	
<213> Artificial Sequence	
<220>	
<221>primer_bind	
<223>Degenerate Vkappa forward primer useful for amplifying human VL domains	
<400> 49	23
gaaattgtgt tgacgcagtc tcc	
<210> 50	
<211> 23	
<212> DNA	
<213> Artificial Sequence	
<220>	
<221>primer_bind	
<223>Degenerate Vkappa forward primer useful for amplifying human VL domains	
<400> 50	23
gacatcgtga tgacccagtc tcc	
<210> 51	
<211> 23	
<212> DNA	
<213> Artificial Sequence	
<220>	
<221>primer_bind	
<223>Degenerate Vkappa forward primer useful for amplifying human VL domains	
<400> 51	23
gaaacgacac tcacgcagtc tcc	
<210> 52	
<211> 23	
<212> DNA	
<213> Artificial Sequence	
<220>	
<221>primer_bind	
<223>Degenerate Vkappa forward primer useful for amplifying human VL domains	
<400> 52	23
gaaattgtgc tgactcagtc tcc	
<210> 53	
<211> 23	
<212> DNA	

<213> Artificial Sequence

<220>  
 <221>primer\_bind  
 <223>Degenerate Vlambda forward primer useful for  
 amplifying human VL domains

<400> 53  
 cagtctgtgt tgacgcagcc gcc 23

<210> 54  
 <211> 23  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <221>primer\_bind  
 <223>Degenerate Vlambda forward primer useful for  
 amplifying human VL domains

<400> 54  
 cagtctgccc tgactcagcc tgc 23

<210> 55  
 <211> 23  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <221>primer\_bind  
 <223>Degenerate Vlambda forward primer useful for  
 amplifying human VL domains

<400> 55  
 tcctatgtgc tgactcagcc acc 23

<210> 56  
 <211> 23  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <221>primer\_bind  
 <223>Degenerate Vlambda forward primer useful for  
 amplifying human VL domains

<400> 56  
 tcttctgagc tgactcagga ccc 23

<210> 57  
 <211> 23  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <221>primer\_bind  
 <223>Degenerate Vlambda forward primer useful for

amplifying human VL domains

<400> 57  
cacgttatac tgactcaacc gcc 23

<210> 58  
<211> 23  
<212> DNA  
<213> Artificial Sequence

<220>  
<221>primer\_bind  
<223>Degenerate Vlambda forward primer useful for  
amplifying human VL domains

<400> 58  
caggctgtgc tcactcagcc gtc 23

<210> 59  
<211> 23  
<212> DNA  
<213> Artificial Sequence

<220>  
<221>primer\_bind  
<223>Degenerate Vlambda forward primer useful for  
amplifying human VL domains

<400> 59  
aatTTtAtgc tgactcagcc cca 23

<210> 60  
<211> 24  
<212> DNA  
<213> Artificial Sequence

<220>  
<221>primer\_bind  
<223>Degenerate Jkappa reverse primer useful for  
amplifying human VL domains

<400> 60  
acgtttgatt tccaccttgg tccc 24

<210> 61  
<211> 24  
<212> DNA  
<213> Artificial Sequence

<220>  
<221>primer\_bind  
<223>Degenerate Jkappa reverse primer useful for  
amplifying human VL domains

<400> 61  
acgtttgatc tccagcttgg tccc 24

<210> 62  
 <211> 24  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <221>primer\_bind  
 <223>Degenerate Jkappa reverse primer useful for  
 amplifying human VL domains  
  
 <400> 62  
 acgtttgata tccactttgg tccc 24  
  
 <210> 63  
 <211> 24  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <221>primer\_bind  
 <223>Degenerate Jkappa reverse primer useful for  
 amplifying human VL domains  
  
 <400> 63  
 acgtttgatc tccaccttgg tccc 24  
  
 <210> 64  
 <211> 24  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <221>primer\_bind  
 <223>Degenerate Jkappa reverse primer useful for  
 amplifying human VL domains  
  
 <400> 64  
 acgtttaatc tccagtcgtg tccc 24  
  
 <210> 65  
 <211> 23  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <221>primer\_bind  
 <223>Degenerate Jlambda reverse primer useful for  
 amplifying human VL domains  
  
 <400> 65  
 cagtctgtgt tgacgcagcc gcc 23  
  
 <210> 66  
 <211> 23  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <221>primer\_bind  
 <223>Degenerate Jlambda reverse primer useful for  
 amplifying human VL domains  
  
 <400> 66  
 cagtctgccc tgactcagcc tgc 23  
  
 <210> 67  
 <211> 23  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <221>primer\_bind  
 <223>Degenerate Jlambda reverse primer useful for  
 amplifying human VL domains  
  
 <400> 67  
 tcctatgtgc tgactcagcc acc 23  
  
 <210> 68  
 <211> 23  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <221>primer\_bind  
 <223>Degenerate Jlambda reverse primer useful for  
 amplifying human VL domains  
  
 <400> 68  
 tcttctgagc tgactcagga ccc 23  
  
 <210> 69  
 <211> 23  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <221>primer\_bind  
 <223>Degenerate Jlambda reverse primer useful for  
 amplifying human VL domains  
  
 <400> 69  
 cacgttatac tgactcaacc gcc 23  
  
 <210> 70  
 <211> 23  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <221>primer\_bind  
 <223>Degenerate Jlambda reverse primer useful for  
 amplifying human VL domains

<400> 70  
 caggctgtgc tcactcagcc gtc 23  
  
 <210> 71  
 <211> 23  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <221>primer\_bind  
 <223>Degenerate Jlambda reverse primer useful for  
 amplifying human VL domains  
  
 <400> 71  
 aattttatgc tgactcagcc cca 23  
  
 <210> 72  
 <211> 15  
 <212> PRT  
 <213> Artificial Sequence  
  
 <220>  
 <221>turn  
 <223>Linker peptide that may be used to join VH  
 and VL domains in an scFv.  
  
 <400> 72  
 Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser  
 1 5 10 15